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Chair: Ms. Bras Gomes

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The meeting was called to order at 3 p.m.

Substantive issues arising from the implementation of the International Covenant on Economic, Social and Cultural Rights (*continued*)

Day of general discussion on a draft general comment on article 15 of the International Covenant on Economic, Social and Cultural Rights (*continued*)

Panel 2: Relationship with other rights (continued)

1. **Mr. Uprimny** (Facilitator for panel 2) invited the participants to resume the discussion begun that morning (E/C.12/2018/SR.51).

2. **Mr. Windfuhr** said that some of the problems relating to the enjoyment of the benefits of scientific progress were not entirely under the control of governments. Governments could do little, for instance, to increase the ability of scientists to attend conferences in other countries or to counter the influence exerted by private sponsors over the direction of research projects. Accordingly, the general comment should address the responsibilities of other actors. He would like to hear the panellists' comments on the issues the Committee should address at the country level, where it might have to go further with regard to State responsibility, by raising such aspects as potential extraterritorial obligations and regulatory options.

3. **Ms. Bidault** (Panellist, Observatoire de la diversité et des droits culturels) said that the Committee should read the appeal issued the previous week by 440 French women historians about their lack of representation in French academia and the various social reasons for their poor representation. The triple reference in the Committee's general comment No. 21 on the right to take part in cultural life, namely to participation in, access to and contribution to cultural life, while useful, ought to be rethought to better cover the content of the right to enjoy the benefits of scientific progress. A more apt trio of components might be access to, contribution to and the practice of scientific activity. The question posed in the discussion paper regarding reconciliation of the right to religious education with scientific explanations was based on a false premise: there was no right to religious education. There was freedom of instruction, and the freedom of parents to have their children educated in keeping with their religious convictions. Therefore, it was more a matter of not allowing parents to use the latter freedom to undermine their children's right to education, including in the sciences.

4. **Ms. Porsdam** (Panellist, University of Copenhagen) said that it was not clear what the respective purviews of the World Intellectual Property Organization (WIPO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) were when it came to cultural rights. One possible way to ensure responsible but free scientific activity was by combining access to culture and science into a single right. That would have the advantage of bringing ethical considerations into the scientific sphere and, with regard to intellectual property, of taking into account the human impact.

5. **Ms. Bhave** (Panellist, RightsTech Women) said that women should be able to take part in and enjoy the benefits of science on a par with men. Although it was not yet clear how to implement ideas such as open source access, mechanisms should be found to include more people in scientific progress. Education systems played a central role in encouraging girls and women to choose science, technology, engineering and mathematics (STEM) subjects. It was important to provide them with female role models to teach them about STEM subjects and inform them where such subjects could be further studied.

Panel 3: Possible limitations

6. **Mr. Mancisidor de la Fuente** (Facilitator for panel 3) invited the panellists to begin the discussion on possible limitations on the right to enjoy the benefits of scientific progress.

7. **Ms. Donders** (Panellist, University of Amsterdam) said that the right to enjoy the benefits of scientific progress and its applications had been ignored and neglected for a very long time. Although academics, some courts and the Special Rapporteur in the field of cultural rights had dealt with the issue, not all its aspects were clear, as demonstrated by the

morning's presentations. A general comment would not be able to capture them all, but it would still be a welcome tool for States parties, the Committee and, most importantly, the holders of the right.

8. The potential for undue use and harmful effects of science had been a part of the earliest international discussions on scientific and technological progress. It followed, therefore, that the present discussion should address not only rights and freedoms, but also possible limitations on the enjoyment of the right to enjoy the benefits of scientific progress. What obligations did States have to protect the population?

9. Limitations on the right to enjoy the benefits of scientific progress could be applied to the design, development and conduct of science and could concern research topics, subjects and methods. Limitations could also be placed on the dissemination of scientific output once research had been completed, for instance in the form of licensing. Limitations were common in international human rights law. In fact, even articles 2 and 4 of the Covenant provided for lawful limitations on the right to the benefits of scientific progress. Furthermore, the Committee's general comment No. 3 (1990) on the nature of States parties' obligations provided for the possibility of retrogressive measures in exceptional cases, such as the temporary reduction of public funding for scientific research.

10. Important in that respect was the concept of the "core content" of Covenant rights and the "core obligations" they entailed. Core content referred to the minimum essential levels of each of the rights, without which they would lose their raison d'être. Such minimum standards had to be met, irrespective of a country's level of development. Retrogressive measures thus should not affect core content. Inspiration in that regard could be taken from the core content defined for closely related rights, such as the rights to health and to food. Core obligations could include a guarantee of non-discrimination, the prohibition and prevention of human rights violations caused by scientific progress, special measures for vulnerable groups, the creation of a participatory environment, the promotion of scientific freedom and the elimination of barriers to international cooperation.

11. Most international human rights instruments contained so-called limitation clauses, often attached to particular provisions. However, a look at the drafting history of article 15 of the Covenant showed that the proposal to include a specific limitation clause had been rejected, out of concern that it would lead to excessive State control. Accordingly, the right to the benefits of scientific progress was regulated by the general limitation clause in article 4, which stipulated that States could adopt limitations only as were determined by law, only insofar as might be compatible with the nature of the rights, and solely for the purpose of promoting the general welfare in a democratic society. Laws must not, however, be arbitrary, unreasonable or discriminatory and should not contradict the nature of Covenant rights. Thus, like retrogressive measures, limitations should not affect the minimum core of the rights.

12. The purpose of "general welfare" had been deliberately left vague. While other human rights instruments, including the Universal Declaration of Human Rights, referred to other legitimate aims, such as the protection of the rights and freedoms of others, national security and the public interest, health and morals, such aims were considered irrelevant to economic and social rights. The list of legitimate aims provided no reason to limit basic rights such as the rights to food and health. On the other hand, national security and public order, health and safety could be very relevant to a limitation of the right to enjoy the benefits of scientific progress, as clearly illustrated by the ethical dilemmas posed by genetic research, or the security risks linked to biological and nuclear weapons. Respect for the rights and freedoms of others could also be relevant, for instance in terms of protecting data and privacy in connection with scientific research and experiments. A specification of such purposes would help States balance different interests and protect against the harmful effects of scientific and technological progress. A more extensive elaboration of "general welfare" thus could usefully be part of the general comment.

13. It should be recalled that certain groups, such as children, older persons, minorities and persons with disabilities, required special protection through limitations because of their vulnerability to abuse and, in some cases, their lack of independent decision-making

power. Nevertheless, limitations should be proportionate and the least restrictive possible, while still achieving their purpose.

14. **Mr. Boggio** (Panellist, Associazione Luca Coscioni), accompanying his statement with a digital presentation, said that it should be borne in mind that science could be harmful in two ways, namely through misapplication and unintended consequences. One form of misapplication derived from dual-use research. Examples included nuclear fission, the synthesis of ammonia and the genetic manipulation of the H5N1 virus, which had led to the development of nuclear weapons, chemical weapons and biological weapons, respectively. The use of nuclear technology, however, was an unprecedented development in human history and should not be cited as a basis for the general comment. The scope and seriousness of the problems it could bring about were not comparable to those of other forms of misapplication. The harmful employment of dual-use research was a misapplication of science, not an application of it. As such, it would not be covered by article 15, which apparently referred only to the beneficial results of science.

15. As for unintended consequences, safeguards were already in place. Science did not operate in a vacuum, and there were internal and external checks. Science had changed dramatically since the adoption of the Covenant. The scientific community had learned a lot from its mistakes — the development of nuclear weapons, eugenics, the Nazi experiments, the use of DDT — and the scientific community had become much more cautious. The members of that community were conscious of the risks of their work and respectful of vulnerable groups.

16. Scientists had been the driving force behind all policy changes. The work done in the early days of genetic engineering had been a prime example. Scientists had figured out that they could mix genetic material from different sources to create something new. It was scientists who had convened a meeting in 1975, calling for a worldwide moratorium on such work, which had been followed by an international conference where the risks associated with recombinant DNA had been defined and strict guidelines had been established. Since then, researchers had carried out countless experiments on recombinant DNA, with no reported incidents. Ubiquitous panels on the ethical, legal and social implications of science and technology, the ever-growing number of Internet hits for strings such as "ethics and artificial intelligence" and "ethics and geoengineering" and the concept of retractions and transparent peer review were other signs of successful self-regulation. Furthermore, new models were emerging, including anticipatory governance and reflexive governance, which involved consultations with multiple stakeholders. Their foundational principles were integrity of purpose, proportionality of action and reflexivity. Those mechanisms were inherently democratic, and were in line with article 4.

17. In sum, the scientific community already had norms and practices aimed at reducing the risk of science being misused or causing harm, and governance strategies were being developed to address the problem of the law always lagging behind innovation. The developments were in line with the requirement that limitations should promote the general welfare in a democratic society, as stipulated in article 4 of the Covenant.

18. In terms of the general comment, States should create environments conducive to the development and diffusion of science. They should incentivize the fulfilment of the foundational principles through the democratic involvement of various stakeholders and they should discourage harmful and non-beneficial applications of science and technology. States should be cautious in discharging that duty, bearing in mind the primacy of scientific freedom, and should disincentivize scientific activity only where there was evidence of its likely misuse or harmfulness. There was no need to add to the safeguards enumerated in article 4. While a degree of ambivalence towards science was natural, science was nonetheless a global public good, essential to tackling the complex challenges facing the world, from ensuring sufficient food to mitigating climate change.

19. **Ms. Muñoz Tellez** (Panellist, South Centre), accompanying her statement with a digital presentation, said that there was an innate tension between intellectual property rights, trade and the right to enjoy the benefits of scientific progress. To what extent did the legal protection of intellectual property constitute a barrier to access to the benefits of science? Under what conditions should it be permitted to do so? One of the concerns she

cited was the expanding scope of what was subject to appropriation, in particular through patents, which effectively gave patent holders exclusive access rights. Article 15 (1) (c) of the Covenant, on the protection of the moral and material interests of authors, raised issues with regard to copyright and patents. Copyright was not necessarily synonymous with the protection of the moral and material interests of authors, nor was it always required in order to achieve that objective. As for patents, they might well be an incentive to engage in scientific production, but, on the flip side, they could also impede access to the benefits of science within the meaning of article 15 (1) (b).

20. What tended to be less discussed was the steps States could take to manage the tension between the protection of moral and material interests and the fomenting of science, on the one hand, and the need for access on the other, while safeguarding freedom of scientific research and creative activity. International exchanges and cooperation in the scientific and cultural fields should be encouraged. In that connection, an intellectual property framework could help establish collaboration, but at the same time, it could create obstacles.

21. The Committee's general comment No. 17 (2005) on the right of everyone to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he or she is the author (art. 15. (1) (c), of the Covenant) already provided a good basis. The new general comment should perhaps expand on the types of innovation and production to be covered by the right to enjoy the benefits of scientific progress, such as innovation and production by indigenous persons and communities. It was important to address both scientific knowledge, which was not necessarily subject to patent protection, and the fruits of scientific progress, which often were. It would also be important for the general comment to clearly define material interest, as different jurisdictions understood the concept differently. In addition, the general comment could draw on some of the elements of the reports of the Special Rapporteur in the field of cultural rights on the impact of copyright and patents on the enjoyment of the right to science and culture (A/HRC/28/57 and A/70/279). The reports discussed trade secrets, trademark law and other forms of intellectual property protection and how well they served the interests of authors and enabled the population to access science and culture. According to the Special Rapporteur, States had an obligation to establish robust and flexible copyright and patent systems in order to comply with their human rights obligations.

22. Areas that could benefit from the integration of a human rights perspective included limitations and exceptions to copyright, for example for the benefit of persons with disabilities, libraries, archives and educational and research activities. Work was under way on a new treaty to protect broadcasting organizations, and one of the issues that must be addressed would be to ensure that limitations and exceptions to the exclusive rights of such organizations would be appropriate and would not undermine the moral and material interests of authors. As for patents, it would be important to consider more fully for example, the implications of the continuously expanding scope of patentable subject matter in various legislation, the use of limitations and exceptions and the protection of traditional indigenous knowledge with regard to genetic resources.

23. **Mr. Andorno** (University of Zurich) said that a recommendation adopted by UNESCO in November 2017 on science and scientific researchers presented a revised version of the 1974 recommendation on the status of scientific researchers and that it could shed some light on some of the matters to be addressed in the Committee's general comment. The new recommendation provided an up-to-date set of principles regarding the role of science in society and the interaction between science and human rights and contained a comprehensive definition of science that was not restricted to natural science. It also stressed the need to strike a balance between promoting freedom of scientific research and preventing negative impacts of science and technological developments on public health, the well-being of present and future generations and the environment. The 2005 Universal Declaration on Bioethics and Human Rights might also be of interest.

24. **Mr. Romano** (Loyola Law School) said that the general comment should not address the issue of the duty of States to protect the population from the harmful use of science. The matter had already been discussed at length, including during the drafting of

the American Declaration on the Rights and Duties of Man and the Universal Declaration of Human Rights. The drafters of the American Declaration had realized that creating an obligation for States to give science a specific direction would be a disservice to science. States should regulate the application of science, but not science itself. Similarly, a Soviet proposal to include a clause in the Universal Declaration regarding the duty to ensure that science and technology were put at the service of peace had been rejected, out of concern that the clause could be hijacked for political reasons. He did not think there had been any technological developments since the adoption of the Universal Declaration that warranted reopening the discussion. The world was currently no more dangerous than it had been in 1948.

25. **Mr. De Schutter** said that it was important to ensure that patents did not skew production towards more profitable domains or richer beneficiaries. In relation to published scientific research, he wished to know what the role of each link in the publication chain — namely, the researcher, the editor, the publisher, the distributor and the reader — should be in order to balance the rights and obligations of all involved. In cases where publications charged a fee, how should the value of the research be shared between them? He asked whether charging a users' fee for access to publicly funded science was compatible with article 2 (1) of the Covenant on the duty of States to dedicate the maximum available resources to the realization of the Covenant.

26. **Mr. Abdel-Moneim** said that, prior to the present discussion, he had thought that article 2, on maximum available resources, underpinned the entire Covenant, but he now thought that many of the rights hinged on article 15, and the statement that science was a human right. Nevertheless, there could be no right to enjoyment of the benefits of scientific progress without the right to education. He was not entirely convinced about the statement that the harmful employment of dual-use research was a misapplication, rather than an application, of science. It could, however, be difficult to draw the line between peaceful and non-peaceful applications of science, for example when it came to the use of nuclear technology. Sometimes the deciding factor was moral. He was not concerned about the limitations on the right to enjoy the benefits of scientific progress imposed by virtue of the Covenant. He was more concerned about the limitations placed by external factors, such as income inequality.

27. **Mr. Windfuhr** said that there was another problem worth considering. Basing research choices solely on risk and impact could favour some domains over others and limit possible outcomes. The scientific community might have good self-regulation, but some safeguards could be effective only if the authorities enforcing them had the legal power to establish them in the first place. In other words, there had to be a governance framework. He would like to know the panellists' views on the best form such a framework should take.

28. **Mr. Abashidze** said that it would not be possible in the general comment to address all the points raised by the participants. Therefore, what needed to be done was to define what exactly it was the Committee wished to achieve. It was possible to establish a right, even knowing that it could not be fully realized. For example, it was an objective fact that when private entities funded research, their ultimate goal was to make a profit, and there was little States could do about it. A great deal of scientific and technological progress had been made by the military, and the results of that progress were overwhelmingly used by the private sector. It was illusory to tell States to avoid funding military research, because that would be tantamount to asking them to jeopardize their own security. Thus, in the same way as article 36 of Protocol I additional to the Geneva Conventions of 1949 prohibited certain future weapons, the general comment should stress that the Committee was against scientific and technological progress when it harmed people or was likely to infringe human rights. Otherwise, the Committee would just be making an empty statement about the right to science.

29. **Ms. Liebenberg** asked what obligations, if any, States might have to ensure that the decline of public funding for university research did not lead to unequal enjoyment of the benefits of scientific progress, and what steps they could take to that end.

30. **Mr. Uprimny** said that he did not agree with the statement that the lack of an explicit reference to misapplications of science in the Covenant and the Universal

Declaration of Human Rights meant that they were not restricted. Both instruments contained a general restriction, which, in the case of the Covenant, could be found in article 4. He did not see the use of interpreting a provision based solely on its drafting history. It was better to provide for the possibility of restrictions, and then to determine what types of restrictions would be compatible with the Covenant.

31. **Ms. Suárez Franco** (FIAN International) said that, on 28 September 2018, the Human Rights Council had adopted a resolution finalizing the draft of the United Nations declaration on the rights of peasants and other people working in rural areas. In the general comment, it would be important to recognize the innovations and scientific contributions of such groups, for example in the fields of agroecology and permaculture, and to emphasize the need for certain limitations in order to prevent the impairment or nullification of their right to enjoy the benefits of scientific progress and its applications.

32. One emerging issue in the context of article 15 of the Covenant was the medicalization of nutrition through the development of meal-replacement pills. That could have a significant impact on food quality, diversity, sustainability and availability, particularly for peasants.

33. **Ms. Bidault** (Observatoire de la diversité et des droits culturels) said that limitations to the rights set out in article 15 could be found in the International Covenant on Civil and Political Rights. The freedom to undertake scientific research, for instance, was conditioned by the rights to freedom of expression and association. It was crucial to ensure that the general comment on article 15 would not call into question the more restrictive provisions of the International Covenant on Civil and Political Rights. Having said that, she emphasized that the words "general welfare in a democratic society" in article 4 of the International Covenant on Economic, Social and Cultural Rights could be interpreted very strictly and could serve as the basis for the establishment of ambitious limitations to article 15.

34. **Ms. Donders** (Panellist, University of Amsterdam) said that, bearing in mind the whole chain of publication for scientific texts, different groups were holders of different parts of the right enshrined in article 15. Scientific freedom was enjoyed by people working in the field of science, while the benefits of scientific progress and its applications were primarily enjoyed by end users. In the middle were, among others, publishers and editors, whose enjoyment of the right under article 15 was less clear, especially as profit-making considerations were at play. The underlying question, in that regard, was whether enjoyment of the benefits of science should be free of charge. In her view, that should not necessarily be the case. In the determination of whether the imposition of fees as a barrier to access was compatible with the obligation under the Covenant to use the maximum of available resources, it was necessary to establish what was actually available, which involved making choices. Moreover, fees could be viewed as a barrier only if there was an obligation to guarantee full and free access, which she did not think was the case. She did not believe that States should be required to spend a minimum amount on science. The acceptability of their level of expenditure depended on the justification given for it.

35. She agreed that States should regulate not science itself, but its application. A comparison could be drawn with freedom of religion, which should not be restricted, and the freedom to manifest religion or belief, which was subject to limitations. In reality, States did restrict scientific freedom, for example through funding decisions, and companies in the private sector did so to an even greater extent.

36. **Mr. Boggio** (Panellist, Associazione Luca Coscioni) said that there was room for States to regulate scientific research. In the field of human genetic modification, for example, there were two rules that were respected by the international community as a whole, namely not to allow clinical trials involving genome editing in embryos, and the so-called "14-day rule", which limited research on human embryos to the first two weeks after fertilization.

37. The actions of a State, including through its courts, were the expression of the will of its population. That fed into the question of which rights should influence decisions about the regulation of science. It was important, in that respect, to look beyond article 15 of the Covenant, for example, to consider the rights to education and the rule of law.

38. **Ms. Muñoz Tellez** (Panellist, South Centre) said that copyright law focused on authors, precisely because they were the creators of content. From a human rights perspective, one of the main issues behind copyright was whether authors could now make a living from their activities, particularly within a digital environment in which traditional business models had been skewed. Regarding the imposition of fees, a distinction should be made between essential and non-essential technologies.

39. Publicly funded research was an area in which States could impose limitations. States could, for instance, change the way they granted patents. In that context, States' actions should be a social policy tool rather than an instrument of economic reward. It was ultimately for States to decide the extent to which patents were granted and the conditions and limitations that should apply to them. The funnelling of funding towards certain research areas was a symptom of a trend where the patent system went beyond the role originally intended for it. Accordingly, the issuance by States of patents should be changed, to reflect their social policy function.

The meeting was suspended at 4.50 p.m. and resumed at 4.55 p.m.

Panel 4: Obligations

40. **Mr. Remiro** (Panellist, Ministry of Science, Innovation and Universities of Spain) said that science and technology were fundamental to the progress and well-being of citizens. Consequently, States should promote scientific research and tools for innovation.

41. The general comment could set minimum targets for State expenditure on science and technology, though it was unclear what those targets should be. That expenditure might include investment in science education and in the promotion of participation in it by women and girls.

42. Citizens had the right to a degree of exposure to science and culture that would enable them to participate actively in democratic decision-making processes. By extension, the promotion of scientific culture was linked with the promotion of democracy. States should have adequate mechanisms in place to ensure the effective participation of citizens in decision-making processes, with the roles of the various stakeholders clearly defined, and where final decisions made by elected officials were respected. Democracies should have frameworks for the provision of advice concerning scientific aspects of political decision-making. Such frameworks could take the form of science and technology departments in each government ministry or of advisory boards. In Spain, for instance, there was the National Commission on Assisted Human Reproduction. The Government intended to set up more advisory boards in other areas and to grant them more concrete powers.

43. In the Government's view, the general comment should address non-discrimination on the basis of sex, race, religion or sexual orientation in the enjoyment of the benefits of science and in participation. A long-standing gender gap existed in many branches of science and, above all, in technology. The general comment should thus mention gender disparities and the obstacles faced by women researchers, including the "leaky pipeline" phenomenon, gender stereotypes, a lack of role models and problems associated with motherhood.

44. While the "precautionary principle" should be taken into account in decision-making concerning science and technology, so should other factors, such as the scientific consensus on new technologies or scientific breakthroughs.

45. Beliefs and practices that had no basis in scientific fact could form part of a State's cultural heritage. They could not, however, be viewed as science. Pseudoscience was dangerous, especially in the area of health, as it could delay the use of effective medical treatments. Pseudoscientific or anti-scientific practices, such as those associated with the anti-vaccine movement or climate change denial, were deeply troubling. With that in mind, States should take appropriate measures to protect their citizens against them.

46. Spain was a multilingual country that employed a range of good practices in multilingual science education at all levels, which it was happy to share.

47. In terms of the diffusion of science and culture, the Government had developed education programmes and had launched calls for the funding of exhibitions, workshops, science fairs and science education activities. It supported and coordinated two science networks, namely the Red de Museos Científicos (Science Museum Network) and the Red de Unidades de Cultura Científica y de la Innovación (Network of Scientific Culture Units and Innovation). The two networks promoted the dissemination of science, collaborated on scientific culture projects and generated synergies that enhanced the quality of science education available to citizens. The Government had also developed science education programmes that were designed to spark an interest in STEM subjects among secondary students and that were complemented by similar regional initiatives.

48. **Mr. Sánchez** (Ministry of Science, Innovation and Universities of Spain) said that, in its general comment, the Committee should call on States to establish mechanisms to regulate ethical and legal conflicts stemming from breakthroughs in science and technology. Moreover, guidance should be provided on how to foster research ethics.

49. In Spain, pursuant to a law adopted in 2011, a national research ethics board — an independent body — would be established in the near future to provide advice on matters related to professional ethics in scientific and technical research. Another law, adopted in 2007, had led to the creation of the Spanish Bioethics Committee, which was tasked with submitting reports, proposals and recommendations to national and regional authorities on matters pertaining to the ethical and social implications of biomedicine and health sciences.

50. The right to participate in scientific debates and decision-making should not conflict with the interests of the population as a whole, nor should participation in science be obligatory. Nevertheless, every effort should be made to ensure that science was accessible to persons of all abilities and interests. One form of participation was citizen science, which had been described in the 2015 White Paper on Citizen Science for Europe as a general public engagement in scientific research activities, in which citizens actively contributed to science either with their intellectual effort or surrounding knowledge, or with their tools and resources. The Government of Spain viewed citizen science as a component of informal science education.

51. All citizens should have a level of connectivity sufficient to enable them to participate in the process of generating knowledge. In Spain, the RedIRIS network was a backbone network that connected 33 national research centres. Through the use of advanced fibre-optic technology, the network made it possible for the scientific community and the population in general to send and receive data at a speed of up to 100 gigabits per second. More than 500 institutions — mainly universities and public research centres — were affiliated with the network. They were thus able to keep abreast of relevant national and international initiatives, including workshops and annual technical conferences. Citizens should have access to the findings obtained through publicly funded research.

52. **Ms. Shaver** (Panellist, Indiana University), speaking via video link, said that States' obligation to respect the right to enjoy the benefits of scientific progress and its applications boiled down to ensuring that national laws and policies did not create barriers to participation in the scientific process or to access to scientific research and essential technologies. It was thus vital to combat discrimination and be aware of the impact of poverty. Moreover, in too many countries, it was impossible for children to study science in their native language beyond primary school. She agreed with Mr. Remiro about the importance of multilingual science education. The Committee should call on more States to adopt such practices.

53. Violations of the State's duty to respect the right to enjoy the benefits of scientific progress included the implementation of policies based on scientific denialism. An example would be the initial rejection, by the Government of South Africa, of the scientific consensus around the need for antiretroviral medication to treat HIV and AIDS. However, the greatest impediment to access to antiretroviral medication and other pharmaceuticals was not scientific denialism, but global patents and trademarks, the issuance of which was dictated by pharmaceutical companies. States had neglected their responsibility to ensure accessibility to them for all citizens, regardless of their ability to pay. It was important for issues related to access to be addressed in the general comment.

54. States had a duty to protect access to scientific knowledge and technologies against attempts to render it private. Indeed, the right to enjoy the benefits of scientific progress and its applications was fundamentally based on the understanding that science was a public good, to which everyone should have equal access. Many scientific resources existed because of public investment, but the wealthiest segments of society had been allowed to claim them as their private property. Scientific journal prices, for example, were absurdly high. Lowering them should be a priority, as that would allow developing countries, in particular, to achieve more with the resources that they invested in science and technology.

55. The general comment should mention the well-established consensus on the need to protect people against scientific research that might endanger their health or other human rights. That protection should be extended to cover the misuse of technology. Just as one would insist on human rights safeguards for university research and experimentation, one should do the same when it came to large-scale experimentation outside a formal university research context, which might include surveillance technologies or the exploitation of social media platforms to manipulate public opinion, for example.

56. While she agreed that there was an obligation for every State to fund scientific research, she did not think that the general comment was the right place to set a quantitative target. The obligation should be laid down ambiguously enough to leave room for further debate on how to measure State contributions. States could, for example, be called upon to make "adequate" investments in scientific research. It was also important not to overemphasize scientific research as the only or primary target for investment. Equal attention should be paid in the general comment to the need for investment in science education and in the expansion of access to essential technologies. The Committee's general comments on the right to education had focused on the immediate obligation of States to ensure that the most basic educational needs were met. Similarly, it would be appropriate in a general comment on the right to enjoy the benefits of scientific progress and its applications to stress that States had a duty to guarantee that everyone had full access, within a reasonable time frame, to basic technologies deemed essential for a life with dignity.

57. She agreed that research funding should benefit vulnerable groups and respond to public priorities. In the United States of America, there were prize competitions, grants of federal money that could be used for various types of research and Grand Challenges, which were initiatives fostering innovation to solve key global health and development problems.

58. Global priorities in scientific research were currently being set by private companies, which was inappropriate. With that in mind, the general comment should echo and support the call from the Scientific Advisory Board for the United Nations to assume a greater role in highlighting appropriate priorities. However, the Committee should not attempt to identify those priorities, as they were liable to change over time. It would perhaps be a good idea to link recommendations concerning adequate investment in research to the Sustainable Development Goals by, for example, underlining the need for an HIV vaccine, for effective protocols to control tuberculosis and for science textbooks in students' mother tongues. She had the impression that a deep-seated fear of totalitarian control had so far prevented the international community from doing some very basic, common-sense priority-setting.

59. **Mr. Yi** (Panellist, United Nations Research Institute for Social Development) said that he would address three big and very different questions. The first was what was meant by the calls for international cooperation in articles 2 (1) and 15 (4) of the Covenant. In his view, their meaning depended on one's perspective and location in time and space. "Science" was a term whose definition had varied across different historical periods. Modern-day science, for example, would not have been imagined by people living in the nineteenth century. It was paramount, therefore, to bear in mind the context in which the Covenant had been drafted.

60. Scientific discourse in the 1960s had been dominated by two themes. On the one hand, there had been the euphoria sparked by rapid advances in science and technology during the Atomic Age. It had fuelled a belief in scientific progress's trickle-down effect in

developing countries, which explained why the Covenant contained references to the "enjoyment" of rights, but overlooked limitations. On the other hand, there had been the cold war, epitomized by the space race, which had distorted responses to legitimate rights claims.

61. In the 1960s, it had been believed that participation in the process of achieving scientific progress would be sufficient to guarantee enjoyment of its benefits. Since then, the international community had learned that the link between participation and enjoyment was not automatic. Consequently, references in the Covenant to participation should be interpreted as alluding also to sharing the benefits.

62. The calls in the Covenant for international cooperation should be considered in the light not only of progress in science and technology, but also of the conditions in which it was achieved. There was no such thing as "responsible science"; only people could be responsible. One of the aims of international cooperation should be to improve conditions for scientific and cultural activities, as underlined in the 2009 Venice Statement on the Right to Enjoy the Benefits of Scientific Progress and its Applications.

63. The second question that he wished to address concerned the factors that influenced the right to enjoy the benefits of scientific progress and its applications. Those factors included social conditions, market conditions, fiscal and regulatory policies, availability of financing, accessibility of information, legal and institutional frameworks, human resource capacities and conditions of infrastructure. Social conditions were, in turn, affected by social development projects, while market conditions could be altered by foreign direct investment and trade.

64. Without proper infrastructure, the right to enjoy the benefits of scientific progress and its applications would inevitably be difficult to realize. For example, some schools in developing countries had received laptops and tablets from donors, and had subsequently experienced power outages that had made it impossible to use the equipment.

65. The third question concerned how science could be put at the service of the 2030 Agenda for Sustainable Development. In his view, that depended on how one defined science and technology. Looking at the Sustainable Development Goals, all of them, aside from Goal 17, which related to means of implementation, contained a direct or indirect reference to science and technology. The fundamental idea underpinning the Sustainable Development Goals was that science and technology should be a tool for transformation. In other words, they should be seen as processes designed to address the fundamental and structural causes of human rights violations. The effectiveness of science and technology as a tool depended on how they were used. When raising the question of international cooperation in the context of the right to enjoy the benefits of scientific progress and its applications, the Committee should bear in mind both the transformative and the counter-transformative properties of science and technology. Though it was not easy, the international community should make consistent efforts to draw a line between good and bad science and technology.

66. **Ms. Santiago** (Working Group on Human Rights and Digital Technology of the American University of Paris) said that she wished to mention three points that should be reflected in the Committee's general comment. First, the definition of "science" must include technology and technological development, which covered the processes, products and tools that people used in their daily lives. Technology was not simply an application of scientific knowledge. It was increasingly a means by which people were able to exercise their rights. Since the Covenant had entered into force, in 1976, digital technologies in particular had become essential for basic tasks and for full participation in a range of settings. Secondly, States parties should not discriminate against disadvantaged and marginalized groups, including refugees and migrants. Any blanket ban, restriction or other measure, such as the wholesale seizure of mobile phones in camps, that directly prevented refugees or migrants from exercising their rights was discriminatory and in violation of States parties' immediate obligations under the Covenant. Thirdly, States parties had a duty to realize the right of all persons to enjoy the benefits of scientific progress, which might require the creation of special programmes to meet the needs of refugees and migrants. One example was digital literacy training. Such training was clearly of interest to refugee and

migrant communities, and programmes in that field had achieved remarkable results. States parties should be encouraged to back positive initiatives by private-sector bodies and non-governmental partners. The engagement of non-State actors did not, however, excuse States parties from their obligation to ensure the full realization of the right of all persons to access science and technology.

67. **Mr. Zerbini Ribeiro Leão** said that, in order to give full effect to the right to enjoy the benefits of scientific progress and its applications, the impact of those applications had to be evaluated transparently, without conflicts of interest, and decisions regarding research priorities had to be made by commissions with the participation of the general population, including members of disadvantaged and marginalized groups.

68. **Ms. Shin** said that she was concerned that the specific needs of disadvantaged and marginalized groups were not given sufficient consideration. While it was easy to speak about the principle of equality, its application posed tremendous challenges. There was a need for all relevant stakeholders to reflect on how to address those challenges in order to turn words into action.

69. **Mr. Windfuhr** said that he would be interested to know how the establishment of a coordination mechanism to identify priority global concerns could be achieved. In some policy areas such as food or health, there was a battle for access to both public and private research funding. He would also welcome proposals on how to stimulate the participation of disadvantaged and marginalized groups in decision-making processes so as to ensure that their needs would be identified and met. He asked whether the advisory boards that had been set up in Spain were already influencing research funding decisions. If so, what steps were taken to ensure that people with limited awareness of scientific research were nevertheless able to benefit from it?

70. **Mr. Remiro** (Panellist, Ministry of Science, Innovation and Universities of Spain) said that, as a member State of the European Union, Spain was committed to the practices of open access and open science, which promoted greater transparency in the evaluation of public policies concerning science. Efforts were being made to develop indicators to measure the social impact of research, and experience was being gained in the organization of consensus conferences and the use of citizen science. The Government of Spain supported the scientific evaluation of the actions taken by the executive and legislative branches.

71. Ensuring the full participation in science of persons with disabilities, particularly those with multiple disabilities, was a challenge. Spain had a policy of inclusive education from birth, and the Ministry of Science, Innovation and Universities ran outreach programmes for vulnerable groups, including persons with disabilities, persons at risk of social exclusion and prisoners. In his view, a strong public health system was important to ensuring that persons with disabilities could enjoy the benefits of scientific progress.

72. **Mr. Sánchez** (Ministry of Science, Innovation and Universities of Spain) said that, in Spain, an agency had been created to manage the funding of science. The advisory boards that had been and were being set up would participate in the agency's decision-making processes and in the external evaluation of science-related projects.

73. **Ms. Shaver** (Panellist, Indiana University), speaking via video link, said that she fully supported calls for the issues of corruption, transparency and conflicts of interest in science to be addressed in the general comment. She also agreed that the need to improve access to science for persons with disabilities should be emphasized. Some good work was already being carried out by disability advocacy groups in that regard. For example, persons who were blind, visually impaired or otherwise print disabled had recently campaigned successfully for the World Intellectual Property Organization to adopt mandatory copyright exceptions to facilitate their access to published works.

74. Membership in a language community was often disadvantageous in terms of participation in science and access to scientific knowledge. In South Africa, for instance, there were no universities in which the Zulu language was the medium of instruction, even though it was the most widely spoken home language in the country. Meanwhile, despite

there being only around 300,000 native speakers of Icelandic, the university system in Iceland was functional and did not require fluency in a second language.

75. The Scientific Advisory Board could perhaps provide answers on how best to establish a coordination mechanism to identify priority global concerns. One step that could be taken to give vulnerable populations a greater voice was to create a complaints mechanism so that accessi ility and other issues could be brought to the public's attention and resolved.

76. **Mr. Yi** (Panell st, United Nations Research Institute for Social Development) said that the environmental protection community had been prolific in establishing international financial facilities to assist in the adoption of science and technology in developing countries. Such steps highlighted the potential for improving access to science in those countries in other fields as well. The international community had to accept that realization of the right to enjoy the benefits of scientific progress incurred a greater financial cost in the case of persons with disabilities. It was a matter of conceptualizing capabilities in order to ensure respect for the human rights of all persons.

77. **Mr. Uprimny** (Facilitator for panel 4) said that he wished to thank all the participants for their valuable input.

The meeting rose at 6 p.m.